

ABSTRACT

The invention relates to a technique for forming a single crystalline thin film of good quality on an underlayer. Such a technique is suitably applicable to provision of an oxide high-temperature superconductor thin film usable for a superconducting wire material, a superconducting device or the like.

The single crystalline thin film formed on a substratum is made of a substance different from that of the substratum. A specific atomic layer contained in common in the substratum and the thin film is shared at an interface between the substratum and the thin film. In a region as adjacent to the interface as 100 or fewer unit cells of the thin film apart from the interface, a ratio of crystalline region having grown with an orientation of ± 2 degrees or less deviation angle on the basis of a crystal orientation of the substratum is 50% or more.